Spectral analysis of solar diameter measurements recorded at Calern Observatory astrolabe during two solar cycles

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Solar diameter measurements performed at Calern Observatory astrolabe during more than two solar cycles show temporal variations. However, due to seasonal effects and instrumental characteristics, recorded solar data are non uniformly sampled and have temporal gaps. Thus, monthly data were considered in all previous analysis of these solar data which limit found harmonic terms to a low frequency range. To determine short-term periodicities from the observed variations, daily solar data corrected from the zenithal distance are analyzed using special methods. In the present work, we use two methods to analyze the data. They are based on least square fits and deconvolution of the observation window function. Results deduced from the analysis confirm harmonic terms already found by other authors and reveal also new higher frequencies.

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